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*St. Louis, Mo., U.S.A.*

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# The Antikamnia Fœtation and Parturition Chart.

By Louis Crusius, A.M., M.D.

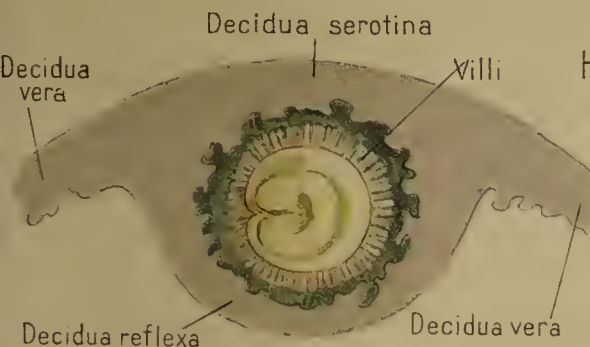
The duration of pregnancy from the fertilization of the ovum until the delivery at full term, is 280 days. This period is divided either into 10 months of 28 days each—a lunar month—or into 9 calendar months.

The physician is frequently called upon to judge the age of a prematurely expelled embryo or fœtus. To enable him to do this approximately, without consulting a vast amount of literature on the subject, the following particulars concerning the important and characteristic changes taking place in each month, will form a guide to the formation of an opinion.

## First Week

During the first week the ovum remains in the Fallopian tube. Having entered the upper part of the tube and become impregnated, it slowly moves down, in the meanwhile beginning its process of repeated division or cleavage, known as the "segmentation of the ovum."

Human Ovum at second week.  
(magnified)



The ovum when first entering the tube measures about  $\frac{1}{16}$ th of an inch, but in its downward passage through the Fallopian tube it increases in size to from  $\frac{1}{8}$ th to  $\frac{1}{4}$ th of an inch.

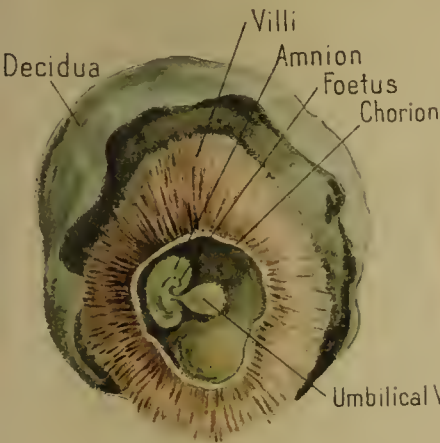
Human Ovum at second week natural size.



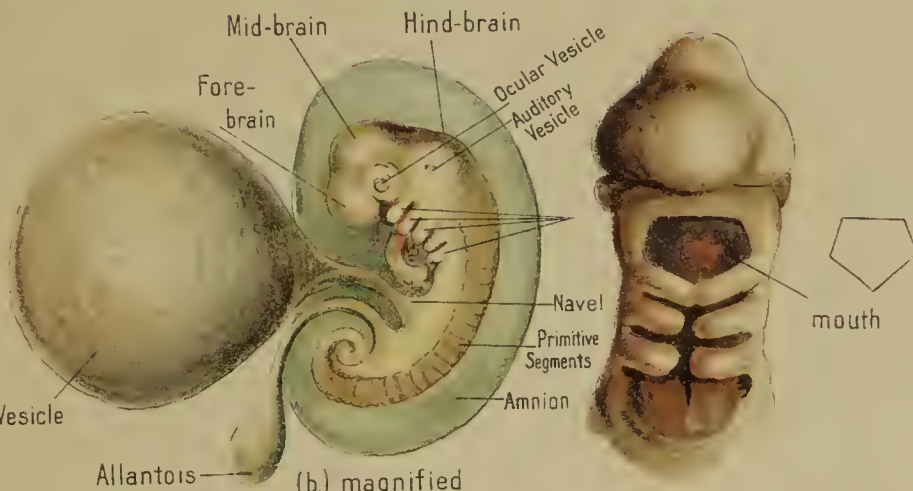
## Second Week

At about the 8th day the ovum reaches the uterus, where it adheres to the modified mucosa usually upon the posterior wall of the uterus. A portion of the mucosa grows up around the ovum, which is called the *decidua reflexa*. That portion of the mucous membrane upon which the ovum attaches itself is known as the *decidua serotina* and the remaining portion of the mucosa constitutes the *decidua vera*. At 12 to 14 days the ovum is a rounded, somewhat flattened sac

from 3 to 5 millimetres in diameter, smooth, except at the equatorial zone, where a number of short unbranched villi make their appearance. The ovum is surrounded completely by the decidua reflexa and serotina. At the end of the second week the amnion, allantois and first rudiments of the embryo appear. The entire ovum now measures about  $\frac{1}{4}$  of an inch and the embryo  $\frac{1}{8}$  inch.



(a) natural size



(b) magnified

Human Embryo at three weeks.

## Third Week

The entire ovum is covered by villi, which now begin to branch and increase in length. The allantois reaches the chorion—the embryo measures about  $\frac{1}{4}$  inch—and presents as characteristic features: a strongly curved back—primary divisions of brain—appearance of visceral arches—rudiments of primitive ocular and auditory vesicles. The primary circulation is established—the alimentary canal presents a straight tube—the mouth appears as a five-sided orifice.

## Fourth Week or End of First Month

The entire ovum is about the size of a pigeon's egg, measuring about  $\frac{1}{3}$  of an inch in its greatest diameter, and weighing in the neighborhood of 40 grains. The entire chorion is covered by villi. The umbilical vesicle is fully developed. The embryo measures about  $\frac{1}{2}$  of an inch in length and resembles a small thick worm curled up.

While in the previous week the embryo was still erect, it now is flexed to such an extent that the head and tail meet and the outline of the back resembles a circle.

The eyes appear as two black dots and the limbs are indicated by two pairs of bud-like processes.

The caudal extremity projects as a free tail and upon the back on each side of the median line are mapped out the provertebræ, a series of quadrilateral areas.

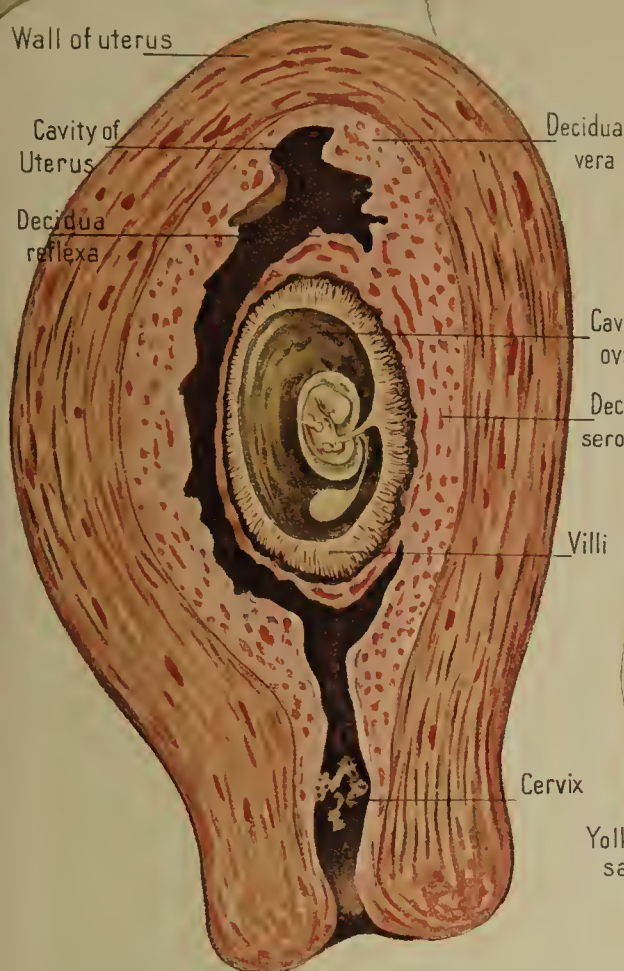


Human Embryo at Fourth Week.  
(natural size.)



Human Embryo at Fourth Week.  
(magnified.)





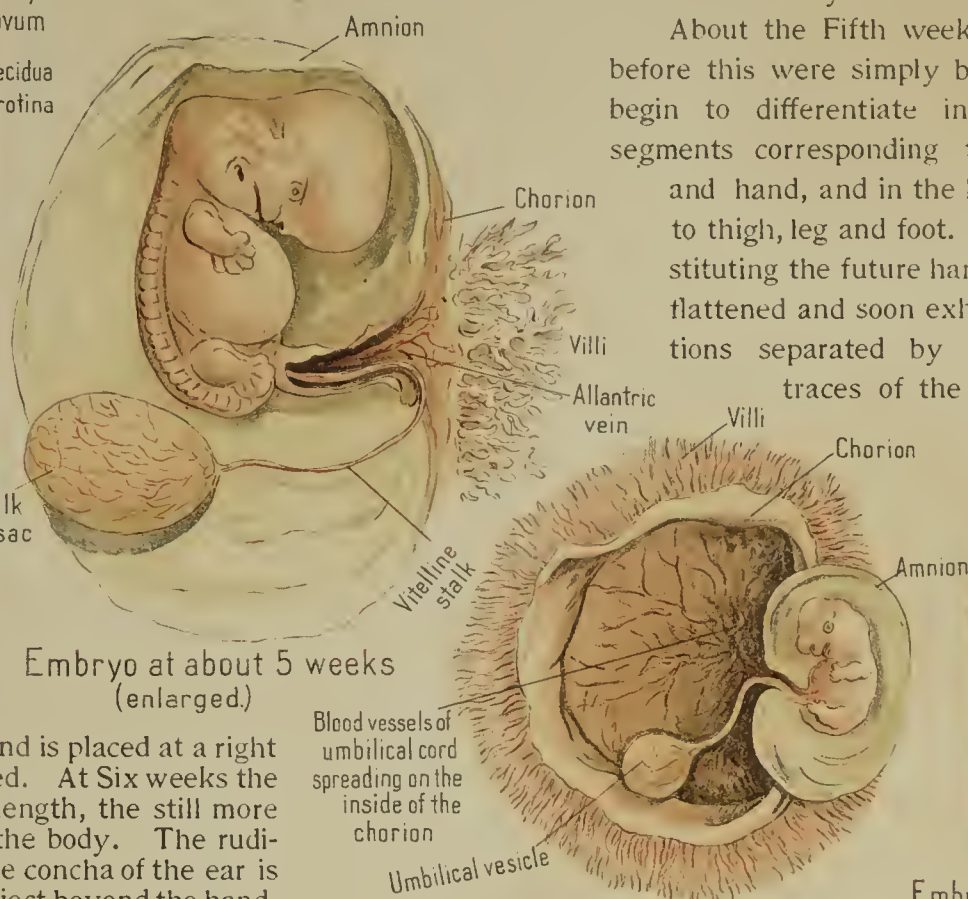
Uterus and ovum at about 5 weeks. (semi-diagrammatic.)

## Second Month

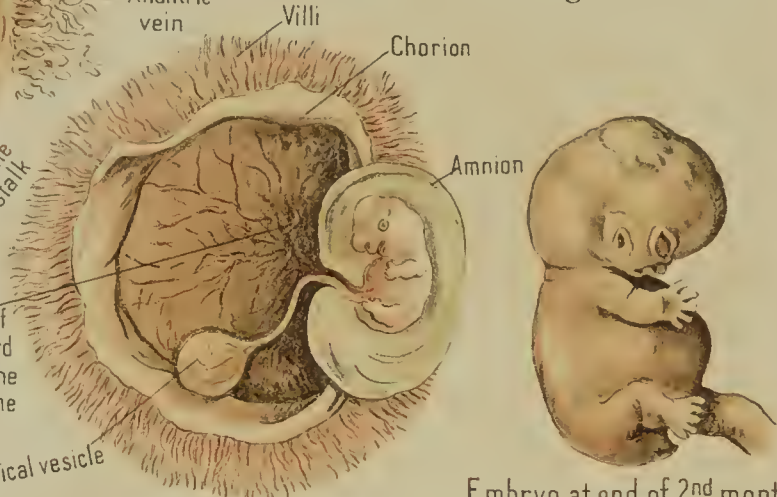
The allantois becomes vascular in its whole extent. Between the Fifth and Sixth week the embryo measures about 15 millimetres in length and is contained in a chorionic vesicle of about 40 millimetres in diameter.

Up to this time the term *embryo* is used to designate the offspring. After the *Sixth week*, however, the name of *fœtus* is applied to it, as now the form is distinctly human.

About the Fifth week the limbs, which before this were simply bud-like processes, begin to differentiate into three distinct segments corresponding to arm, forearm and hand, and in the lower extremities to thigh, leg and foot. The portion constituting the future hand or foot becomes flattened and soon exhibits slight elevations separated by shallow grooves, traces of the fingers and toes.



Embryo at about 5 weeks (enlarged.)



Human Foetus at 7 weeks. (natural size)

Embryo at end of 2<sup>nd</sup> month about 7½ weeks. (magnified.)

The head has become more elevated and is placed at a right angle to the body. The back is less curved. At Six weeks the embryo measures about 19 millimetres in length, the still more elevated head being more in one line with the body. The rudiments of the eyelids have appeared and the concha of the ear is indicated. The fingers are separated and project beyond the hand. The activity of the umbilical vesicle ceases. At the end of the Second month the fœtus measures about 22 millimetres in length (1 inch) and the tail commences to disappear.

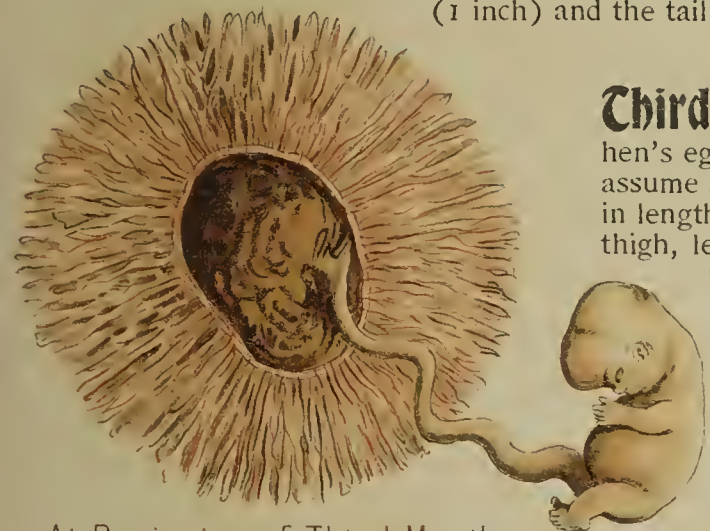
## Third Month

At the beginning of the Third month the ovum is about the size of a hen's egg—the umbilical cord has lengthened considerably, but its bloodvessels do not yet assume a spiral course. The embryo measures from 25 to 30 millimetres (1 to 1¼ inch) in length and weighs about 15 to 20 grammes. The arm, forearm and hand as well as the thigh, leg and foot are distinctly indicated—there is a marked bend at the elbow—the fingers and toes are free and the soles of the feet are turned toward each other—the tail has disappeared.

According to Minot, "the face shows two lines which, as seen in profile, mark the two ridges which run over the cheek, one alongside the nose to the corner of the mouth, the other from the eye; these ridges are highly characteristic of the Ninth week and traces of them not rarely persist in the adult physiognomy."

At *Two and a half months* (10 weeks) the embryo measures 32 millimetres—the protruding abdomen recedes—the eyelids begin to meet. The genital tubercle projects and is about 1.5 millimetres long and has a knob-like end which indicates the future glans penis or clitoris. On its lower surface is situated a groove, the genital groove bounded by the genital folds, which in the female become the nymphæ. On each side of the genital tubercle appear two fleshy eminences, the genital ridges—in the female they persist as the labia majora, and in the male as the scrotum.

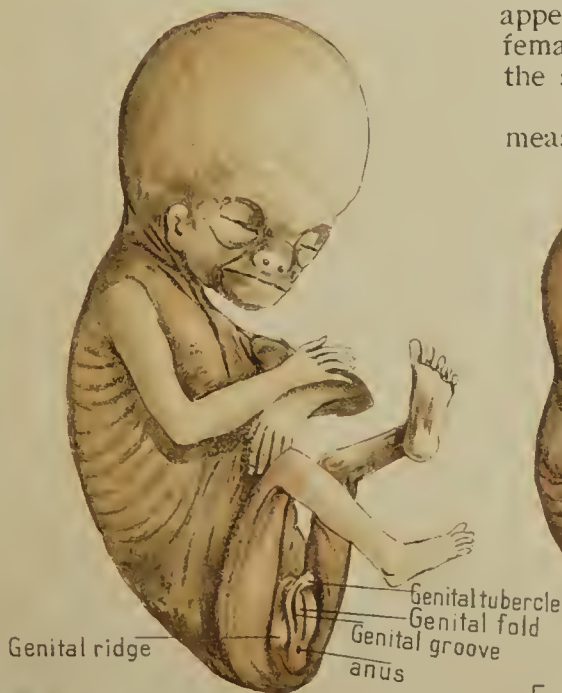
At seventy-five days or about eleven weeks the embryo measures 55 millimetres. The head is still very large and the body slender. The arm is bent down from the shoulder and the forearm is directed upward toward the chin. The thighs are flexed and the legs turned inward so that the soles of the feet face one another. The rudiments of the nails appear like thin membranes upon the fingers and toes. The cervical flexion disappears and the head is further lifted. The development of the ribs distinguishes the thorax from the abdomen. Sex is indefinite.



At Beginning of Third Month. (natural size.)



At Beginning of Third Month or about 9<sup>th</sup> week. (3 times natural size.)



Embryo at about 11<sup>th</sup> week. (enlarged.)



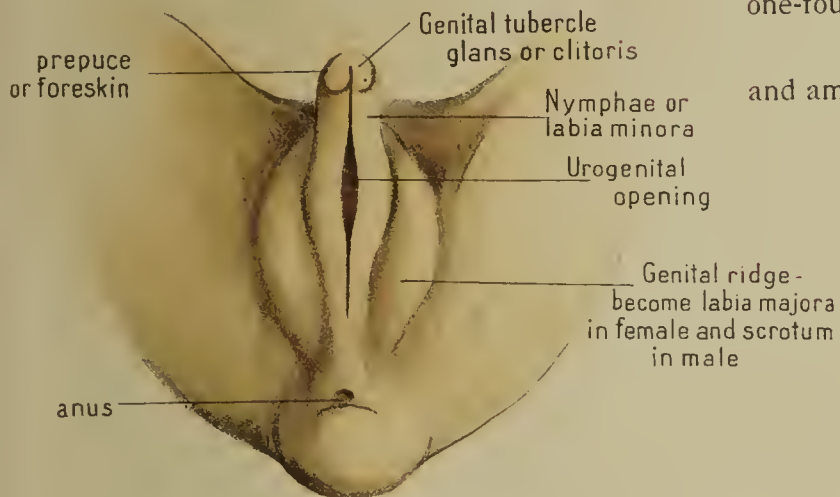
Embryo at about 11<sup>th</sup> week. (natural size.)







Foetus at 12<sup>th</sup> week, within the amnion (natural size.)



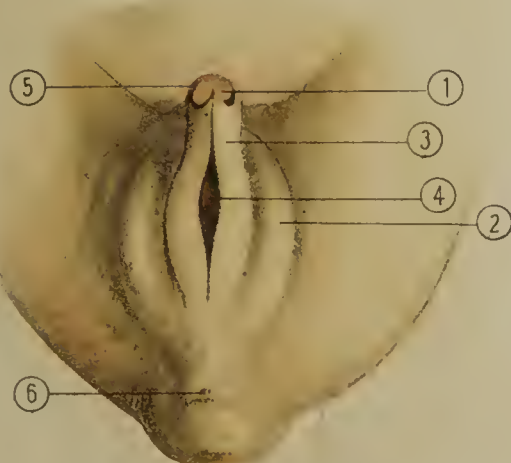
External Genitalia (enlarged.)

The sex can now be readily distinguished. In both sexes the genital ridges have increased in size—in the male the two opposite ridges have met and united to form the scrotum, a slight ridge, the raphe, marks the line of junction which persists in the adult. The glans penis and prepuce are formed, and the urethral or genital groove extends into the glans, its borders (genital folds) uniting to form the stalk of the penis. In the female the genital ridges are but slightly modified; they constitute the labia majora—the genital tubercle forms the clitoris covered by the prepuce. The borders of the urethral groove (genital folds) do not unite as in the male, but remain as elevated ridges to form the labia minora or nymphæ.

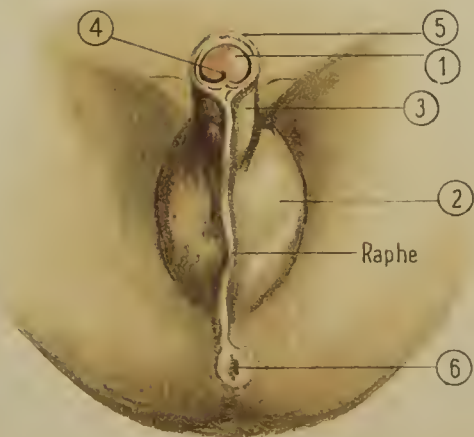
In the subcutaneous areolar tissue fat cells develop.

External genital organs of human fetus - at 4<sup>th</sup> month. (magnified - semi diagrammatic.)

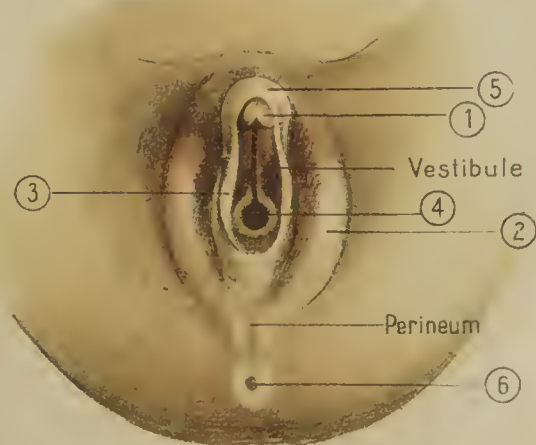
Indifferent type. (3<sup>rd</sup> month)



male



female



- |                    |               |                |                  |           |           |
|--------------------|---------------|----------------|------------------|-----------|-----------|
| ① Genital tubercle | — Glans penis | — Clitoris     | ④ Genital groove | — Urethra | — Vagina  |
| ② Genital ridge    | — Scrotum     | — Labia majora | ⑤ Prepuce        | — Prepuce | — Prepuce |
| ③ Genital fold     | — Penis       | — Labia minora | ⑥ Anus           | — Anus    | — Anus    |

## End of Third Month

(Eighty-four days.) Embryo measures 75 to 80 millimetres or about 3 inches. The ovum about 4 inches in length. Weight about 4 ounces.

The placenta is distinctly formed and isolated, the chorion having lost its villousities in a great measure. The cord has lengthened and now forms spiral turns. The umbilical vesicle and the allantois have disappeared.

The genital tubercle (which forms the penis or the clitoris) is the same in the female as in the male. The glans measures about 1 millimetre and the genital folds (nymphæ) about 3 millimetres. The genital or urethral groove is open. The eyelids unite. The nose is broad and triangular shaped—the lips thick and the chin pointed.

*At no other age miscarriages occur so frequently as at 3 months.*

## Fourth Month

At 3½ months the foetus measures about 4¼ inches. The accompanying sketch represents the natural attitude when in the uterus confined within its membranes. Toward the end of the fourth month the placenta has increased in size and thickness. The umbilical cord measures about 2 or 3 times the length of the foetus and has thickened considerably from the formation of Wharton's jelly. The foetus measures about 125 millimetres or 5 inches and weighs about 230 to 240 grammes (7¾ oz.)—the head being about one-fourth of the length of the body.

Mouth, eyes, ears and nose assume their proper shape. The chorion and amnion unite.



Human Embryo at end of 4<sup>th</sup> month.



## Fifth Month

At four and a half months

the foetus measures about 6 inches. The face is wrinkled and has a senile aspect. Hairs appear on the scalp and other parts of the body.

The skin is firmer and of a rosy hue. To-

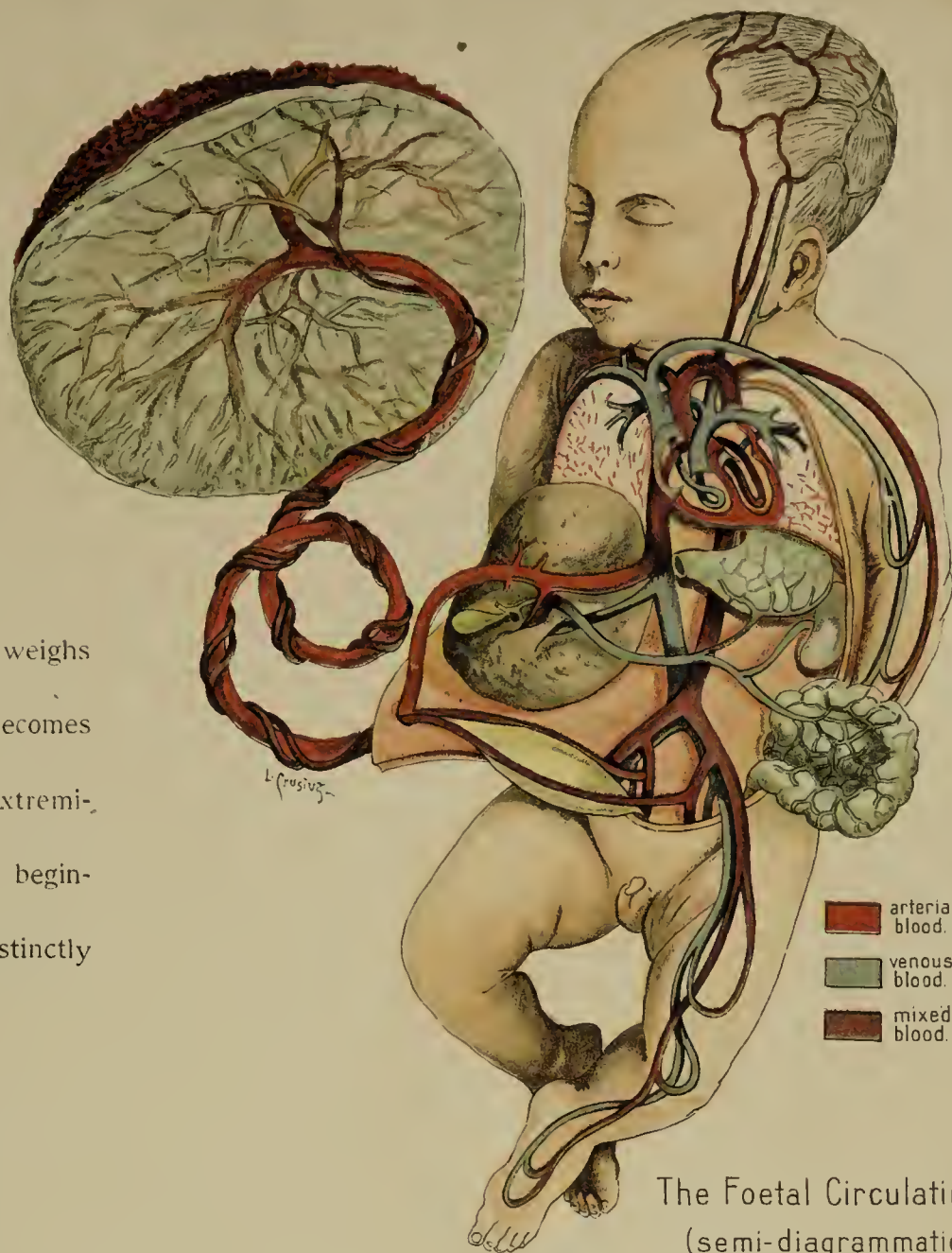
ward the end of the fifth month the foetus measures about 20 centimetres or 8 inches, and weighs

about one pound. The surface of the body becomes

covered with the vernix caseosa. The lower extremities are now longer than the upper—the nails are begin-

ning to form and the foetal movements can now be distinctly

felt by the mother.



The Foetal Circulation  
(semi-diagrammatic.)



Human Foetus at about 4½ months—  
(natural size.)



## Sixth Month

At the ter-

mination of the Sixth month the

foetus measures about 30

centimetres (12 inches)

and weighs about 1½ lbs.

The skin is wrinkled

and of a dirty-reddish

color. Eyebrows and

eyelashes begin to grow.

The free border of the

nail projects from the

underlying skin. A foetus born

at this stage may breathe feebly,

but will die in the course of a

few hours.

